

1470.0 - ABS Geospatial Web Services User Guide, 2015

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Summary

What are Geospatial Web Services?

WHAT ARE GEOSPATIAL WEB SERVICES?

BACKGROUND

The ABS Geospatial Web Services are a set of services that facilitate the use of the Australian Statistical Geography Standard (ASGS) by computer applications. They are specifically designed to enable the sharing and use of the ASGS boundaries and their associated ASGS codes over the internet. The services provide access to the present 2011 edition of ASGS digital boundaries and will be maintained as further ASGS boundaries are published.

OVERVIEW

A web service is a method of communicating between two electronic devices over a computing network. The World Wide Web Consortium (W3C) defines a web service as "a software system designed to support interoperable machine-to-machine interaction over a network".

A geospatial web service provides a series of methods to support machine-to-machine interactions of geospatial data and functions. For example, a request by a computing application for geospatial data (e.g. a Statistical Area Level 1 (SA1) boundary or set of SA1 boundaries) can be made to a geospatial web service and the service would return the geospatial data specified in the request, which can then be displayed by the application in the form of a map.

The ABS Geospatial Web Services provide access to the ASGS boundaries. The objectives of publishing the ASGS boundaries as web services are:

1. To provide easy access to the official ASGS boundaries in a machine readable format which facilitates their use within web applications.
2. To provide an unambiguous single point of truth for the ASGS boundaries.

The geospatial web services are provided as ESRI RESTful services and can be interacted with using the ESRI JavaScript API.

Geospatial Web Services provided by the ABS

GEOSPATIAL WEB SERVICES PROVIDED BY THE ABS

The ABS provides geospatial web services for the Australian Statistical Geography Standard (ASGS) regions. This includes the ABS Structures, areas defined by the ABS, and Non-ABS Structures, areas not designed by the ABS but approximated using areas from the ASGS Main Structure. The tables below are a list of the uniform resource identifiers (URI) that provide access to all of the ASGS Structures that are accessible through ABS Geospatial Web Services.

Table 1: 2011 ASGS ABS Structures

Structure Name	2011 ASGS Area	Reference Date	URL
Main Structure	Australia (AUS)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/AUST/MapServer
	State/Territory (STE)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/STE/MapServer
	Statistical Area Level 4 (SA4)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SA4/MapServer
	Statistical Area Level 3 (SA3)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SA3/MapServer
	Statistical Area Level 2 (SA2)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SA2/MapServer
	Statistical Area Level 1 (SA1)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SA1/MapServer
	Meshblock (MB)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/MB/MapServer
Indigenous Structure	Indigenous Region (IREG)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/IREG/MapServer
	Indigenous Area (IARE)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/IARE/MapServer
	Indigenous Location (ILOCL)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/ILOCL/MapServer
Section of State and Urban Centres and Localities and Structure	Section of State (SOS)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SOS/MapServer
	Section of State Ranges (SOSR)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SOSR/MapServer
	Urban Centres/Localities (UCL)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/UCL/MapServer
Remoteness Structure	Remoteness Area (RA)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/RA/MapServer
Greater Capital City Statistical Area Structure	Greater Capital City Statistical Area (GCCSA)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/GCCSA/MapServer
Significant Urban Area Structure	Significant Urban Area (SUA)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SUA/MapServer

Table 2: 2011 ASGS Non-ABS Structures

Structure Name	2011 ASGS Area	Reference Date	URL
Non-ABS Structures	Commonwealth Electoral Division (CED)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/CED/MapServer
	Commonwealth Electoral Division (CED)	2012	https://geo.abs.gov.au/arcgis/rest/services/ASGS2012/CED/MapServer
	State Electoral Division (SED)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SED/MapServer
	Local Government Area (LGA)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/LGA/MapServer
	Local Government Area (LGA)	2012	https://geo.abs.gov.au/arcgis/rest/services/ASGS2012/LGA/MapServer
	Local Government Area (LGA)	2013	https://geo.abs.gov.au/arcgis/rest/services/ASGS2013/LGA/MapServer
	Local Government Area (LGA)	2014	https://geo.abs.gov.au/arcgis/rest/services/ASGS2014/LGA/MapServer
	Local Government Area (LGA)	2015	https://geo.abs.gov.au/arcgis/rest/services/ASGS2015/LGA/MapServer
	Postal Area (POA)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/POA/MapServer
	State Suburb (SSC)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/SSC/MapServer
	Australian Drainage Division (ADD)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/ADD/MapServer
	National Resource Management Region (NRMR)	2011	https://geo.abs.gov.au/arcgis/rest/services/ASGS2011/NRMR/MapServer
	Tourism Regions (TR)	2015	https://geo.abs.gov.au/arcgis/rest/services/ASGS2015/TR/MapServer

Table 3: 2016 ASGS ABS Structures

Structure Name	2016 ASGS Area	Reference Date	URL
Main Structure	Australia (AUS)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/AUS/MapServer
	State/Territory (STE)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/STATE/MapServer
	Statistical Area Level 4 (SA4)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SA4/MapServer
	Statistical Area Level 3 (SA3)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SA3/MapServer
	Statistical Area Level 2 (SA2)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SA2/MapServer
	Statistical Area Level 1 (SA1)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SA1/MapServer
	Meshblock (MB)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/MB/MapServer
Indigenous Structure	Indigenous Region (IREG)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/IREG/MapServer
	Indigenous Area (IARE)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/IARE/MapServer
	Indigenous Location (ILOC)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/ILOC/MapServer
Section of State and Urban Centres and Localities and Structure	Section of State (SOS)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SOS/MapServer
	Section of State Ranges (SOSR)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SOSR/MapServer
	Urban Centres/Localities (UCL)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/UCL/MapServer
Remoteness Structure	Remoteness Area (RA)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/RA/MapServer
Greater Capital City Statistical Area Structure	Greater Capital City Statistical Area (GCCSA)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/GCCSA/MapServer
Significant Urban Area Structure	Significant Urban Area (SUA)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SUA/MapServer

Table 4: 2016 ASGS Non-ABS Structures

Structure Name	2016 ASGS Area	Reference Date	URL
Non-ABS Structures	Commonwealth Electoral Division (CED)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/CED/MapServer
	Commonwealth Electoral Division (CED)	2017	https://geo.abs.gov.au/arcgis/rest/services/ASGS2017/CED/MapServer
	Commonwealth Electoral Division (CED)	2018	https://geo.abs.gov.au/arcgis/rest/services/ASGS2018/CED/MapServer
	State Electoral Division (SED)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SED/MapServer
	State Electoral Division (SED)	2017	https://geo.abs.gov.au/arcgis/rest/services/ASGS2017/SED/MapServer
	State Electoral Division (SED)	2018	https://geo.abs.gov.au/arcgis/rest/services/ASGS2018/SED/MapServer
	State Electoral Division (SED)	2019	https://geo.abs.gov.au/arcgis/rest/services/ASGS2019/SED/MapServer
	State Electoral Division (SED)	2020	https://geo.abs.gov.au/arcgis/rest/services/ASGS2020/SED/MapServer
	Local Government Area (LGA)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/LGA/MapServer
	Local Government Area (LGA)	2017	https://geo.abs.gov.au/arcgis/rest/services/ASGS2017/LGA/MapServer
	Local Government Area (LGA)	2018	https://geo.abs.gov.au/arcgis/rest/services/ASGS2018/LGA/MapServer
	Local Government Area (LGA)	2019	https://geo.abs.gov.au/arcgis/rest/services/ASGS2019/LGA/MapServer

Local Government Area (LGA)	2020	https://geo.abs.gov.au/arcgis/rest/services/ASGS2020/LGA/MapServer
Postal Area (POA)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/POA/MapServer
State Suburb (SSC)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/SSC/MapServer
Australian Drainage Division (ADD)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/ADD/MapServer
National Resource Management Region (NRM)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/NRM/MapServer
Tourism Regions (TR)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/TR/MapServer

Table 5: 2016 Destination Zones

Structure Name	2016 Area	Reference Date	URL
Not applicable	Destination Zones (DZN)	2016	https://geo.abs.gov.au/arcgis/rest/services/ASGS2016/DZN/MapServer

How to use ABS Geospatial Web Services

HOW TO USE ABS GEOSPATIAL WEB SERVICES

The ABS geospatial web services are provided as ESRI RESTful services. This technical guide provides examples of the use of these services using the ESRI JavaScript API.

DEVELOPMENT ENVIRONMENT SET UP

Set up your development environment by following this guide:

https://developers.arcgis.com/javascript/jsapi/api_devenv.html

Using ABS Geospatial Web Services

This section provides a simple example of the computer code required to create a basic visualisation of ASGS boundaries using the ESRI JavaScript API and the ABS geospatial web services.

Creating a Basic Geospatial Web Application

Create an ArcGIS API for JavaScript Web application by following the tutorial found here:

https://developers.arcgis.com/javascript/jshelp/intro_firstmap_amd.html

When developing an Australian focused application it is useful to know the centre of Australia so that the application starts with the Australian continent in the view at an appropriate scale.

The ABS uses the following point as the centre of Australia and a zoom value of 4

To change the map to focus on Australia, change this line:

```
center: [-56.049, 38.485],
zoom: 4,
to:
```

```
center: [133.25, -24.15],
```

Note the US spelling.

Here is some example code showing how to do this:

```
<!DOCTYPE html>
<html>
<head>
<title>Statistical Area Level 4</title>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
<meta name="viewport" content="initial-scale=1, maximum-scale=1,user-
scalable=no">
<link rel="stylesheet" href="http://js.arcgis.com/3.13/dijit/themes/claro/
claro.css">
<link rel="stylesheet" href="http://js.arcgis.com/3.13/esri/css/esri.css">
<style>
html, body, #mapDiv{
padding: 0;
margin: 0;
height: 100%;
}
</style>

<script src="http://js.arcgis.com/3.13/"></script>
<script>
var map;
require([
"esri/map",
"esri/layers/ArcGISDynamicMapServiceLayer",
"esri/layers/ArcGISTiledMapServiceLayer",
"dojo/domReady!"
], function(Map, ArcGISDynamicMapServiceLayer, Tiled) {
map = new Map("mapDiv", {
center: [133.25, -24.15],
zoom: 4,
basemap: "streets"
});

var dynamicMapServiceLayer = new ArcGISDynamicMapServiceLayer("http://
www.censusdata.abs.gov.au/arcgis/rest/services/2011_SA4/MapServer");
dynamicMapServiceLayer.setMinScale(36112);
map.addLayer(dynamicMapServiceLayer);

var tiledMapServiceLayer = new Tiled("http://www.censusdata.abs.gov.au/arcgis/
rest/services/2011_SA4/MapServer");
tiledMapServiceLayer.setMaxScale(7223);
map.addLayer(tiledMapServiceLayer);
});
</script>

</head>
<body class="claro">
<div id="mapDiv"></div>
</body>
</html>
```

Creating a Dynamic Map Service Layer

To view ABS boundaries on the map, you can load an ABS geospatial web service as a dynamic map service layer. In this example:

https://developers.arcgis.com/javascript/jssamples/map_dynamic.html

you would replace

http://sampleserver1.arcgisonline.com/ArcGIS/rest/services/Demographics/ESRI_Population_World/MapServer

with the URL of the Geospatial Web Service that you want to load. A list of the web service URLs are provide here [Geospatial Web Services provided by the ABS](#).

Creating a Cached Tiled Map Service Layer

To improve the performance of the ABS geospatial web services they have been cached between zoom levels 0 and 13. Here is an example of loading the cached version of a ABS geospatial web service:
https://developers.arcgis.com/javascript/jssamples/layers_ags_tiled.html

To change the map so that it only shows the cached map service layer at zoom levels 0-13 and the dynamic map service layer at zoom levels 14-19, use:

```
setMaxScale(7223); on the cached map service layer and  
setMinScale(36112); on the dynamic map service layer.
```

This limits the zoom levels that they are displayed at. The scales for each of the zoom levels are listed under 'Levels of Detail in the Web service' in the 'Services Directory'.

To display information about individual regions in the Web service you can configure an InfoTemplate so that when a user clicks on a region, information about that region is displayed. Here is an example showing how to configure InfoTemplates on dynamic map service layers:

https://developers.arcgis.com/javascript/jssamples/map_twodynamic.html

Within the Web service in the 'Services Directory', if you click on the layer and scroll to the bottom, you can see what fields that layer has so that you can configure them in the InfoTemplate.

Useful References

The ArcGIS API for JavaScript documentation. [<https://developers.arcgis.com/javascript/jsapi/>]

If you have any questions about the ArcGIS API for JavaScript, check ESRI's GeoNet site for answers. [<https://geonet.esri.com/welcome>]

About this Release

ABS Geospatial Web Services allow the exchange of geospatial data between computer systems (machine-to-machine services) facilitating the sharing of data through a programmatic interface across the internet. It provides geospatial data to support ABS applications as well as allowing developers to integrate these data into their own applications. It provides access to both the Australian Statistical Geography Standard (ASGS) boundary data and their associated ASGS codes.

History of Changes

This document was added or updated on 12/07/2016.

05/04/2018 The Geospatial Web Services provided by the ABS page was updated to include geospatial boundary web service URL for Volume 5 2016 ASGS Remoteness Areas (cat. no 1270.0.55.005).

09/10/2017 The Geospatial Web Services provided by the ABS page was updated to include geospatial boundary web service URLs for Volume 3 ASGS 2017 Non ABS Geographies (cat. no 1270.0.55.003) and Volume 4 Section of State, Urban Centres and Localities and Significant Urban Areas (cat. no. 1270.0.55.004).

21/12/2016 The Geospatial Web Services provided by the ABS page was updated to include the geospatial boundary web service URL for the 2016 Destination Zones. These updates coincide with the release of the 2016 Census of Population and Housing Destination Zones (cat. no. 8000.0).

Further additions will be made to coincide with the release of the 2016 ASGS Vol 4 and 5 that will include other 2016 ASGS regions

12/07/2016 The Geospatial Web Services provided by the ABS page was updated to include geospatial boundary web service URLs for the 2016 ASGS Main Structure and Greater Capital City Statistical Area Structure region boundaries. These updates coincide with the release of the 2016 ASGS Vol 1 (cat. no. 1270.0.55.001).

Further additions will be made to coincide with the releases of the 2016 ASGS Vol 2 through 5 that will include other 2016 ASGS regions

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